



# DATA SUMMARY

REPORT REGISTER NO. DS98-11000  
(November 1998)

**TRENDS IN  
CESAREAN BIRTHS  
IN CALIFORNIA  
1990-1997**

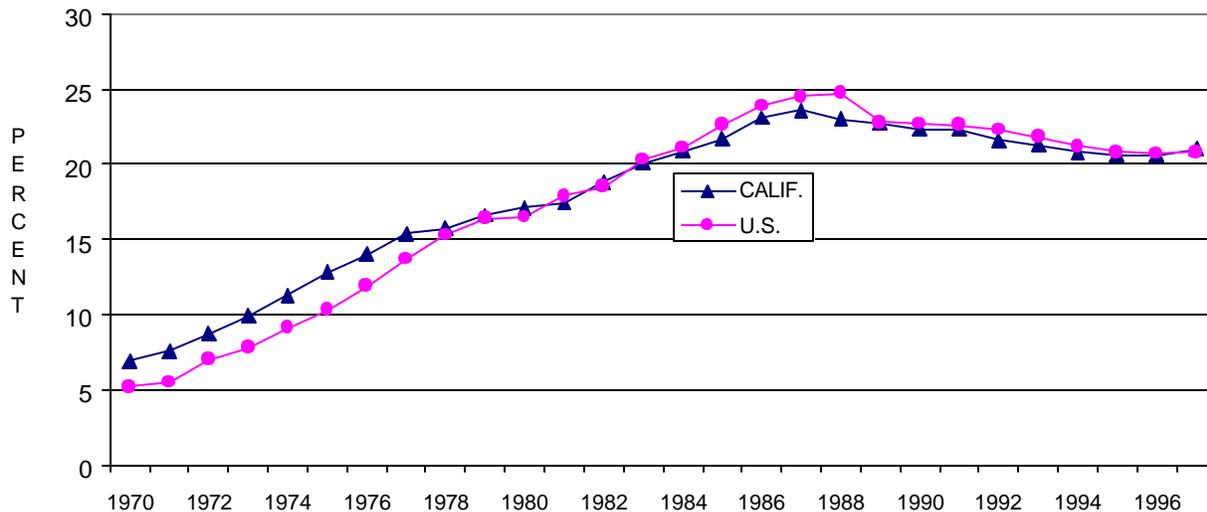
## Cesarean Births

This report presents trend data on California's cesarean births for the years 1970-1997. Trends in the total, primary and repeat cesarean births are shown as well as trends by age and race/ethnicity of mother for the years 1990-1997.

After showing increases from 1970 to 1987 the percent of live births delivered by cesarean section in California decreased from 1988 to 1996. In 1997, 21.0 percent of all live births were cesarean section births. This was an increase of 1.9 percent from 1996 and a decrease of 11.0 percent from the high cesarean delivery rate of 23.6 in 1987. Of the 524,174 total live births in 1997, 109,995 were delivered by cesarean section. This was approximately one out of every five births in California. (Figure 1 and Table 1).

California's cesarean delivery rate of 21.0 per 100 live births was significantly higher ( $p < .05$ ) than the preliminary United States (U.S.)<sup>1</sup> rate of 20.8. This was the first time since 1982 that California's rate was higher than the U.S. rate (Figure 1 and Table 1).

**FIGURE 1**  
**PERCENT OF LIVE BIRTHS DELIVERED BY CESAREAN SECTION**  
**CALIFORNIA AND UNITED STATES, 1970 - 1997**  
**(By Place of Residence)**



Source: Table 1.

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**TABLE 1**  
**NUMBER OF LIVE BIRTHS AND NUMBER AND PERCENT**  
**DELIVERED BY CESAREAN SECTION**  
**CALIFORNIA AND UNITED STATES, 1970 – 1997**  
**(By Place of Residence)**

YEAR	CALIFORNIA			UNITED STATES		
	NUMBER OF LIVE BIRTHS	NUMBER OF CESAREAN BIRTHS	PERCENT <sup>1</sup> CESAREAN BIRTHS	NUMBER OF LIVE BIRTHS	NUMBER OF CESAREAN BIRTHS	PERCENT <sup>1</sup> CESAREAN BIRTHS
1997	524,174	109,995	21.0	3,894,970 <sup>a</sup>	810,154 <sup>a</sup>	20.8 <sup>a</sup>
1996	538,628	110,807	20.6	3,891,494	797,119	20.7
1995	551,226	113,623	20.6	3,899,589	806,722	20.8
1994	567,034	117,816	20.8	3,952,767	830,517	21.2
1993	584,483	124,559	21.3	4,000,240	861,987	21.8
1992	600,838	129,546	21.6	4,065,014	888,622	22.3
1991	609,228	135,618	22.3	4,110,907	905,077	22.6
1990	611,666	136,095	22.3	4,110,563 <sup>b</sup>	914,096 <sup>b</sup>	22.7 <sup>b</sup>
1989	569,308	128,904	22.7	3,798,734 <sup>b</sup>	826,955 <sup>b</sup>	22.8 <sup>b</sup>
1988	532,708	122,199	23.0	3,909,510	966,000	24.7
1987	503,376	118,463	23.6	3,809,394	934,000	24.5
1986	481,905	110,872	23.1	3,756,547	899,000	23.9
1985	470,816	101,781	21.7	3,760,561	851,000	22.6
1984	447,394	92,958	20.9	3,669,141	774,000	21.1
1983	435,722	86,975	20.1	3,638,933	739,000	20.3
1982	429,631	79,937	18.8	3,680,537	681,000	18.5
1981	420,418	72,684	17.4	3,629,238	650,000	17.9
1980	402,720	68,888	17.1	3,612,258	596,000	16.5
1979	379,187	62,562	16.6	3,494,398	573,000	16.4
1978	356,156	55,890	15.7	3,333,279	510,000	15.3
1977	347,576	53,561	15.4	3,326,632	455,000	13.7
1976	332,105	46,602	14.0	3,167,788	378,000	11.9
1975	317,318	40,501	12.8	3,144,198	323,000	10.3
1974	311,668	35,199	11.3	3,159,958	286,000	9.1
1973	297,834	29,469	9.9	3,136,965	246,000	7.8
1972	306,375	26,614	8.7	3,258,411	227,000	7.0
1971	329,826	25,054	7.6	3,555,970	194,000	5.5
1970	362,652	24,852	6.9	3,731,386	195,000	5.2

<sup>1</sup> In calculating percentages, unknown type of delivery was excluded.

<sup>a</sup> U.S. data for 1997 are preliminary.

<sup>b</sup> Based on states reporting cesarean births.

Source: 1970 – 1988 U.S. data: Vital Statistics of California, 1992, Table 2-36. 1989-1996 U. S. data: NCHS Report of Final Natality Statistics, 1996 *Monthly Vital Statistics Report*, Vol. 46, No. 11, June 30, 1998. 1997 U. S. data: NCHS, Vital Statistics Report, *Births and Deaths: Preliminary Data for 1997*, Vol. 47, No. 4, October 1998. State of California, Department of Health Services, Birth Records.

In the report, *Healthy People 2000*, the federal government established several national risk reduction objectives for the year 2000 dealing with cesarean births:

“Reduce the cesarean delivery rate to no more than 15 per 100 deliveries.  
Reduce the primary (first time) cesarean delivery rate to no more than 12 per

100 deliveries. Reduce the repeat cesarean delivery rate to no more than 65 per 100 deliveries among women who had a previous cesarean delivery."<sup>2</sup>

*California's cesarean delivery rate is still above the year 2000 objectives. Data for 1997 show that 14.3 percent of births to women who have not had a previous cesarean were primary cesarean deliveries. This was an increase of 2.1 percent from 1996 and a decrease of 7.7 percent from 1990 (Table 2). The repeat cesarean delivery rate was 79.4 percent in 1997, up from 77.2 percent in 1996, and down from the 1990 rate of 83.3 percent (Table 3).*

**TABLE 2  
PRIMARY CESAREAN BIRTHS AS A PERCENT OF BIRTHS  
TO WOMEN WHO HAVE NOT HAD A PREVIOUS CESAREAN  
CALIFORNIA, 1990 – 1997  
(By Place of Residence)**

YEAR	TOTAL BIRTHS <sup>1</sup>	PRIMARY CESAREAN BIRTHS	
		NUMBER	PERCENT
1997	470,140	67,135	14.3
1996	482,595	67,589	14.0
1995	494,760	70,181	14.2
1994	508,578	72,498	14.3
1993	523,913	76,783	14.7
1992	539,641	80,448	14.9
1991	548,396	85,839	15.7
1990	550,201	85,392	15.5

<sup>1</sup> Excludes repeat cesarean, vaginal birth after previous Cesarean and unknown type of delivery.

Source: State of California, Department of Health Services, Birth Records.

**TABLE 3  
REPEAT CESAREAN SECTIONS AS A PERCENT OF ALL PRIOR CESAREAN BIRTHS  
CALIFORNIA, 1990 – 1997  
(By Place of Residence)**

YEAR	TOTAL PRIOR CESAREAN BIRTHS	REPEAT CESAREAN	
		BIRTHS	PERCENT
1997	54,004	42,860	79.4
1996	55,985	43,218	77.2
1995	56,407	43,442	77.0
1994	58,332	45,318	77.7
1993	60,310	47,776	79.2
1992	60,886	49,098	80.6
1991	60,431	49,779	82.4
1990	60,834	50,703	83.3

Source: State of California, Department of Health Services, Birth Records.

## Cesarean Births by Age of Mother

Table 4 shows the percent of cesarean births by age of mother for the years 1990-1997. The age of the mother is a critical factor in whether or not a woman will have a cesarean birth. As the age of the mother increases, there is a statistically significant increase in the percent of cesarean births. In 1997, the percent of cesarean births ranged from a low of 13.7 for women aged 19 and under to a high of 34.1 for women aged 40 and over. Each of the age groups shown increased from 1996 to 1997 with the exception of women aged 19 and under, which remained the same for both years. Women aged 40 and over had the largest increase with 4.0 percent.

**TABLE 4**  
**PERCENT OF LIVE BIRTHS DELIVERED BY CESAREAN SECTION**  
**BY AGE OF MOTHER**  
**CALIFORNIA, 1990 – 1997**  
**(By Place of Residence)**

AGE OF MOTHER	YEAR OF BIRTH								1997 CESAREAN BIRTHS
	1990	1991	1992	1993	1994	1995	1996	1997	
TOTAL	22.3	22.3	21.6	21.3	20.8	20.6	20.6	21.0	109,995
19 and UNDER	15.5	15.4	14.5	14.5	14.1	14.0	13.7	13.7	8,361
20 – 24	19.0	18.5	18.1	17.7	17.1	16.7	16.6	16.8	20,658
25 – 29	22.4	22.6	21.6	21.2	20.7	20.3	20.0	20.2	28,578
30 – 34	25.8	25.7	25.0	24.7	24.0	23.7	23.7	24.1	29,391
35 – 39	29.7	29.9	29.3	29.2	28.1	28.2	28.2	28.9	18,129
40 and OVER	32.7	34.2	33.2	33.5	32.9	33.0	32.8	34.1	4,871
UNKNOWN	-	-	-	-	-	-	-	-	7

Note: In calculating percentages, unknown type of delivery was excluded.  
Source: State of California, Department of Health Services, Birth Records.

## Cesarean Births by Race/Ethnicity

*Shown in Table 5 are the percentages of live births delivered by cesarean section by race/ethnicity of mother for the years 1990 through 1997. During 1997, the percent of cesarean births ranged from a high of 24.5 for Other race/ethnic women to a low of 19.4 percent for Asian/Pacific Islander women. Of the six race/ethnic groups shown, all but one showed increases from 1996 to 1997. Cesarean births to American Indians decreased 7.7 percent from 1996 and decreased 15.4 percent from 1990. The percentage of births to women of the Other race/ethnic group increased 12.9 percent from 1996 to 1997 and decreased 0.8 percent from 1990. From 1990 to 1996 Black mothers had the highest percentages of cesarean births ranging from 24.9 percent in 1990 to 23.0 percent in 1996. In 1997, their cesarean delivery rate was 23.3 percent.*

**TABLE 5**  
**PERCENT OF LIVE BIRTHS DELIVERED BY CESAREAN SECTION**  
**BY RACE/ETHNICITY<sup>1</sup> OF MOTHER**  
**CALIFORNIA, 1990 – 1997**  
**(By Place of Residence)**

RACE/ETHNICITY OF MOTHER	YEAR OF BIRTH								1997 CESAREAN BIRTHS
	1990	1991	1992	1993	1994	1995	1996	1997	
TOTAL	22.3	22.3	21.6	21.3	20.8	20.6	20.6	21.0	109,995
AMERICAN INDIAN	24.0	23.6	23.5	22.9	22.1	21.6	22.0	20.3	524
ASIAN/PACIFIC ISLANDER	21.0	20.9	20.1	19.6	19.1	19.1	19.2	19.4	10,996
BLACK	24.9	24.7	24.4	24.5	23.3	23.3	23.0	23.3	8,387
HISPANIC	20.0	20.3	19.7	19.9	19.6	19.6	19.8	20.3	50,563
WHITE	24.2	24.2	23.5	22.8	22.2	21.8	21.6	21.9	38,876
OTHER	24.7	23.6	19.5	20.9	16.6	18.3	21.7	24.5	101
UNKNOWN	-	-	-	-	-	-	-	-	548

<sup>1</sup> American Indian, Asian Pacific Islander, Black, White, Other and Unknown excludes Hispanic ethnicity. Hispanic includes any race category.

Note: In calculating percentages, unknown type of delivery was excluded.

Source: State of California, Department of Health Services, Birth Records.

### Cesarean Births by County

Table 6 shows the percent of cesarean section births for 56 of California's Counties for the years 1990-1997. Alpine and Sierra Counties had fewer than 100 live births and were not included in the analysis. The percent of cesarean section births in 1997 varied from a high of 32.2 in Imperial County to a low of 13.8 in Glenn County.

The statewide percentage of live births delivered by cesarean section in 1997 was 21.0 percent. Of the 56 counties for which percentages were calculated, 36 were below the statewide percentage and 19 were above. One county (Santa Barbara) had the same percentage of cesarean section births as the statewide total. It is not uncommon for county percentages to fluctuate from year to year particularly in those counties with a small number of births. When examined over the eight year period, eight counties had higher percentages of cesarean births in 1997 than in any of the previous years: Kings, Lake, Mendocino, Modoc, Placer, Solano, Tuolumne, and Yolo.

Statistical tests ( $p < .05$ ) applied to the percentage of cesarean births in each county revealed that three counties showed statistically significant decreases and eight counties had significant increases from 1996 to 1997. The counties showing significant decreases were San Luis Obispo, Sonoma and Stanislaus. The counties, which showed a significant increase from 1996 to 1997, were Imperial, Los Angeles, Monterey, Orange, Sacramento, San Mateo, Solano and Yolo.

**TABLE 6**  
**PERCENT OF LIVE BIRTHS DELIVERED BY CESAREAN SECTION**  
**CALIFORNIA, 1990 - 1997**  
**(By Place of Residence)**

COUNTY	1990	1991	1992	1993	1994	1995	1996	1997	1997 CESAREAN BIRTHS
TOTAL	22.3	22.3	21.6	21.3	20.8	20.6	20.6	21.0	109,995
ALAMEDA	20.2	19.0	18.7	18.0	17.6	16.7	16.6	17.2	3,572
AMADOR	23.3	22.3	28.8	17.5	28.3	23.1	21.5	19.6	53
BUTTE	18.8	17.0	18.5	17.5	15.7	17.4	15.2	16.7	377
CALAVERAS	23.0	21.2	26.5	21.9	25.0	26.0	21.9	24.5	80
COLUSA	21.7	22.7	23.0	20.4	19.8	20.5	14.6	20.5	63
CONTRA COSTA	22.9	22.0	21.0	19.9	18.9	17.8	18.7	18.9	2,326
DEL NORTE	19.4	21.9	19.6	20.2	19.5	18.7	16.2	15.7	51
EL DORADO	22.4	23.8	22.3	20.3	20.4	20.6	21.4	21.9	364
FRESNO	22.5	21.9	22.1	21.7	21.1	21.7	22.4	21.8	3,081
GLENN	14.9	18.6	14.5	12.2	13.2	12.4	12.7	13.8	59
HUMBOLDT	21.3	23.1	22.1	22.4	22.9	20.4	19.4	20.2	298
IMPERIAL	32.1	33.4	31.5	32.3	35.0	33.8	29.0	32.2	767
INYO	16.9	20.0	18.1	15.0	22.0	19.0	15.8	20.5	39
KERN	22.1	22.1	20.6	20.2	20.0	21.4	19.7	19.7	2,221
KINGS	23.7	24.0	23.8	23.1	23.8	23.7	24.9	25.1	522
LAKE	18.6	18.1	16.4	16.6	18.5	15.2	18.4	19.3	109
LASSEN	22.6	17.9	15.3	17.6	17.2	15.8	20.9	18.0	59
LOS ANGELES	23.1	23.5	22.9	22.8	22.2	22.6	22.6	23.1	37,457
MADERA	22.2	21.4	21.0	22.1	19.8	20.8	20.5	20.7	411
MARIN	20.5	19.8	17.6	20.6	18.1	18.3	17.3	19.0	504
MARIPOSA	25.4	26.8	27.6	29.8	24.6	27.2	27.9	27.4	37
MENDOCINO	17.6	19.0	18.3	19.2	18.1	20.0	17.4	20.1	206
MERCED	24.4	23.5	25.4	25.0	23.1	21.9	22.0	22.5	811
MODOC	12.1	20.2	9.8	17.2	18.9	17.2	16.7	22.4	22
MONO	23.3	15.5	16.6	20.3	18.1	18.4	17.5	18.6	22
MONTEREY	26.1	26.6	24.0	23.8	19.8	17.6	18.3	20.3	1,365
NAPA	19.4	19.3	17.0	19.1	17.7	17.3	17.4	19.4	291
NEVADA	19.8	21.0	16.3	17.1	18.2	18.5	15.9	16.8	134
ORANGE	22.5	22.6	20.8	20.7	20.4	20.0	19.7	20.3	9,640
PLACER	20.5	19.5	20.0	20.7	19.6	20.6	20.1	21.4	559
PLUMAS	26.9	31.8	23.6	27.8	26.0	26.8	30.4	26.3	41
RIVERSIDE	21.9	22.0	21.7	21.3	21.2	20.5	20.6	20.5	4,771
SACRAMENTO	19.1	19.4	18.9	18.2	18.2	17.7	17.1	18.5	3,196
SAN BENITO	25.7	25.3	25.6	24.8	21.1	24.6	22.1	25.3	225
SAN BERNARDINO	22.6	23.0	21.9	22.3	21.7	21.5	21.5	22.1	6,245
SAN DIEGO	23.7	22.9	22.4	21.6	20.8	20.1	19.9	20.3	8,797
SAN FRANCISCO	19.5	19.0	18.3	18.1	16.1	16.4	16.7	17.3	1,418
SAN JOAQUIN	19.3	20.2	19.6	19.4	20.4	18.9	19.6	19.4	1,688
SAN LUIS OBISPO	25.7	25.4	25.1	24.9	24.8	22.8	24.6	21.6	537
SAN MATEO	17.5	18.8	17.2	17.2	17.2	17.3	17.4	18.7	1,882
SANTA BARBARA	21.4	22.1	21.4	21.5	22.7	22.2	20.8	21.0	1,215
SANTA CLARA	19.5	18.9	18.2	17.5	17.1	16.6	17.7	18.0	4,748
SANTA CRUZ	21.1	20.3	20.8	22.0	20.6	19.7	17.3	18.7	666
SHASTA	30.6	29.9	27.2	27.0	27.3	28.5	27.0	26.6	532
SISKIYOU	17.4	22.7	14.7	14.2	15.2	18.7	19.4	18.6	79
SOLANO	17.6	17.5	18.5	17.5	17.5	17.3	17.1	19.3	1,054
SONOMA	19.2	18.4	18.6	19.3	19.1	18.1	18.6	16.8	907
STANISLAUS	23.5	22.1	21.5	21.1	21.5	21.0	20.7	18.3	1,242
SUTTER	28.0	27.1	27.6	25.9	24.3	22.0	20.1	22.2	269
TEHAMA	24.0	23.2	20.7	20.8	20.1	22.0	21.7	18.3	115
TRINITY	23.3	29.1	32.5	19.9	27.3	28.5	24.8	17.0	17
TULARE	23.3	24.1	22.6	24.1	22.8	23.1	24.0	23.5	1,631
TUOLUMNE	25.2	21.1	25.6	25.5	24.4	22.8	24.2	25.7	120
VENTURA	24.4	24.3	22.9	23.4	22.7	22.6	23.1	22.8	2,568
YOLO	16.2	15.4	15.7	14.4	14.2	13.9	12.9	16.7	352
YUBA	23.8	23.7	21.7	20.9	19.0	19.0	18.8	16.9	177

Note: Counties with less than 100 births are not shown.  
In calculating percentages, unknown type of delivery was excluded.  
Source: State of California, Department of Health Services, Birth Records.

## Notes

The term “significant” within the text indicates statistically significant based on the difference between two independent rates ( $p < .05$ ).

## References

- <sup>1</sup> National Center for Health Statistics, Births and Deaths: Preliminary Data for 1997, *National Vital Statistics Reports*, DHHS Pub. No. (PHS) 99-1120, October 1998; Vol. 47, No. 4.
- <sup>2</sup> National Center for Health Statistics, *Healthy People 2000 Review, 1997*, National Health Promotion and Disease Prevention Objectives, DHHS Pub. No. (PHS) 98-1256, October 1997.